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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/127,031	07/31/1998	KEISUKE ARAKI	35.C12892	9620

5514 7590 11/15/2002

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EXAMINER

NGUYEN, THONG Q

ART UNIT	PAPER NUMBER
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2872

10

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/127,031

Applicant(s)

ARAKI ET AL.

Examiner

Thong Q. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 1998 and 26 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,9-12,14,20-22,24,27 and 44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,9-11,20-22,24,27 and 44 is/are rejected.
- 7) ☒ Claim(s) 12 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 1998 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Response to Amendment

1. The present Office action is made in response to the Pre-Amendments (Paper Nos. 7, and 9) of 7/31/98 and 8/26/02.

Election/Restrictions

2. The present application was subjected to a restriction requirement as set forth in the Office action (Paper No. 8) of 6/26/2002. In response to the restriction requirement, applicant has filed an amendment (Paper No. 9) on 8/26/02 in which applicant has canceled claims 7-8, 13, 15 through 19, 23, 25, 26, 28 through 43 and 45 through 68. Applicant has also elected the species (II) with traverse and argued that the remaining claims, i.e., claims 1-6, 9-12, 14, 20-22, 24, 27 and 44, are readable from the elected species. After further review the pending claims, the Examiner has agreed with the applicant and thus the restriction requirement is now withdrawn. All remaining claims 1-6, 9-12, 14, 20-22, 24, 27 and 44 are examined in this Office action.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

4. The drawings contain twenty-six sheets of figures 1A to 28 have been received by the office on 7/31/1998.
5. Figures 6A through 7E should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See specification at pages 3-10 and 29-30.

12 new
steps
minimum
major

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See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

7. The disclosure is objected to because of the following informalities:

First, the Summary of the invention is objected to because it contains numerous details of the invention. The present Summary is not considered as the one comply with the requirement as set forth in 37 CFR 1.73. Applicant should provide a brief summary of the invention, and move other details to the section of "Detailed Description of the Preferred Embodiments"; and

Second, it appears that the present specification contains a number of paragraphs which are repeated at least two times. See the paragraph in page 11 (lines 3-18) and the paragraph in page 7 (lines 19-27) through page 8 (first seven lines), for example. Applicant should carefully proofread the specification and made any correction, if necessary, for the purpose of providing a clear and concise descriptions of the invention. Appropriate correction is required.

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Claim Objections

8. Claims 12 and 14 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

a) Claim 12 is objected to because the features recited in the claim fail to further limit the subject matter recited in its base claim. In other words, the comparison between the dimensions of the spot and noise when the system (?) is at a minimum aperture value is not related to any features of *the optical element* (Examiner's emphasis) recited in the base claim 1.

b) Claim 14 is objected for the similar reason as set forth in element a) above.

Suggestion

The following corrections are suggested to claims 22 and 24.

In each of claims 22 and 24, on line 7, "b a length" should be changed to --b is a length--, and on line 8, "11 an image magnification" should be changed to -- 11 is an image magnification--.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-6, 9-11, 20-22, 24, 27 and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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a) Claim 1 is indefinite. The claim recites that aberration is generated by both the object-side imaging element and image-side imaging element for the purpose of flattening disturbance of light intensity; however, the claim fails to recite sufficient structure to warrant the presence of functional language. In other words, it is unclear how the aberration is generated by each of the object-side imaging element and image-side imaging element for the function/result of "flattening disturbance of light intensity".

b) Claim 2 is indefinite for the following reasons: 1) the similar reason as set forth in element a) above; 2) It is not clear about the device to be claimed. Which features of the device are claimed? The claim discloses an optical element having some features; however, it is unclear whether the features appeared in the preamble of the claim are of the prior art or those of the device which applicant intends to claim. The claim does not have the term "comprise(s)" or similar words so that it is not clear about the structure of the device claimed.

b) Claim 3 is rejected under 35 USC 112, second paragraph for the following reasons: 1) the same reason as set forth in element b) above; 2) the feature thereof 'An optical element....predetermined plane' (lines 1-12) is indefinite because each of the recitation "in the surface of the transparent body" (lines 6-7 and lines 10-11) lacks a proper antecedent basis. Should "in the surface of the transparent body" appeared on the mentioned lines be changed to —in the transparent body—to make clear the feature claimed?

c) Claim 5 is indefinite because the feature "said plurality of reflective surfaces" (lines 2-3) lacks a proper antecedent basis.

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d) Claim 9 is indefinite because the feature thereof "wherein degradation...the axis" (lines 2-5) is indefinite. In other words, it is unclear about the feature concerning the so-called 'specific aberration' recited in the mentioned feature.

e) Claim 11 is indefinite by the recitation thereof "wherein degradation...off the axis" (lines 2-7). What does applicant means by "such aberration...off the axis" (lines 3-7)?

f) Claim 27 is rejected for the similar reason as set forth in element a) above.

g) The remaining claims are dependent upon the rejected base claims and thus inherit the deficiencies thereof.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-2, 4-5, 9-10, 20, 27 and 44, as best as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Cook (U.S. Patent No. 5,550,672).

Cooke discloses an off-axis three-mirror anastigmatic system having a correcting mirror. In the system as described in columns 3-5 and shown in figs. 2-3 comprises an object-side imaging section (12, 26) having at least one off-axis curved mirror for forming an intermediate image (22) and an image-side imaging section (14, 16) having at least one off-axis curved mirror for forming a final image on a photoreceptive surface of an image pickup device. See column 5 and

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fig. 3. Since each of the mirrors (12, 14, 16) has its own power and the sum of powers is zero for the purpose of correcting the aberration; therefore, the aberration generating by the object-side imaging section and the aberrations generated by the image-side imaging section in combination will flat the disturbance of light intensity on the final image caused by the noise source located at or near the intermediate image position. See column 3, for example.

13. Claims 1-2, 4-5, 9-10 and 27, as best as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Foo (U.S. Patent No. 5,515,207).

Foo discloses a catadioptric system. As described in columns 1-5 and shown in fig. 1 comprises an object-side imaging section (10, 20) for forming an intermediate image (70) and an image-side imaging section (40, 50) for forming a final image. The system comprises at least one mirror located off-axis (see column 1) and each element (30 or 50) in the object-side imaging section and the image-side imaging section generates aberrations which aberrations in combination will flat the disturbance of light intensity on the final image caused by the noise source located at or near the intermediate image position. See columns 3-4.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1-6, 9-11, 20-22, 24, 27 and 44, as best as understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunefumi et al (Japanese reference No. 8-292372, submitted by applicant).

Tsunefumi et al disclose a zoom optical system and image pickup device using the system. The zoom optical system comprises at least two optical elements which are able to move relative to each other during a zooming process, an aperture stop whose diameter is able to vary to control the number of light passing therethrough, and an image pickup device for receiving the image of an object. Each optical element is a solid transparent body having an entrance refractive surface and a plurality of reflecting surfaces disposed off-axis or decenter with respect to the optical axis of the transparent body, and an exit refractive surface. The entrance surface and at least one of the reflecting surfaces form an object-side imaging section for forming an intermediate image of an object, and the exit surface and the rest of the reflecting surfaces form an image-side imaging section for transferring the intermediate image to a final image location. From the data concerning the optical characteristics of the refractive surfaces and the reflective surfaces as provided in the examples, it is clear that each of the object-side imaging section and the image-side imaging section generates at least one specific aberrations and in combination together the aberrations caused by both sections will sufficient to flat the disturbance of light intensity distribution. With regard to the conditions governing the spot size

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(or diameter) on the intermediate image and the final image as claimed, such features are inherently from the structure and the data provided from the examples described in the reference. If it is not inherent then it would have been obvious to one skilled in the art at the time the invention was made to modify the system provided by Tsunefumi et al by adjusting the optical characteristics of at least one reflecting surfaces of the transparent body for the purpose of reducing/eliminating the noise caused by dust or environment items, if nay, located in the intermediate plane.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (703) 308-4814. The examiner can normally be reached on M-F.

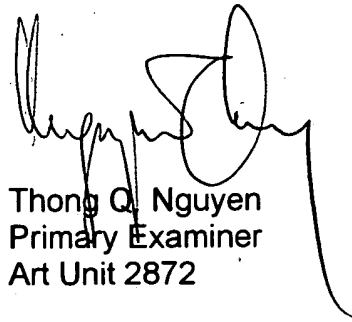
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

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Thong Q. Nguyen
Primary Examiner
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November 14, 2002